**A Training Report on**

Programming Foundation with JavaScript, HTML and CSS

Organized by

**Duke University (Coursera)**

Submitted in partial fulfillment of award of

**BACHELOR OF TECHNOLOGY**

degree

in

Computer Science and Engineering

By

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**Moradabad Institute of Technology, Moradabad (U.P.)**

**Session: 2021-22**

**MORADABAD INSTITUTE OF TECHNOLOGY**

**Department of Computer Science & Engineering**

**CERTIFICATE**

Certified that the Industrial Training entitled **Programming Foundation with JavaScript, HTML and CSS** submitted by **Yash Bhatnagar** Roll Number – **2000820100156** in their own work and has been carried under my supervision. It is recommended that the candidates may now be evaluated their industrial training work by the university.

**Date: Dr. Manish Gupta**

**(Associate Professor)**

![A picture containing diagram

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**GRADES**

![Graphical user interface

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**ABSTRACT**

This course, Programming Foundations with JavaScript, HTML and CSS by Duke University, introduces the basics of HTML, CSS and JavaScript – these are the front-end web technologies used to create webpages. So this course will help out participants to create their own webpages. Through this course, the participants learn HTML, CSS and JavaScript basic syntax and logics and greatly benefit from performing hands-on-exercises. Apart from this this, it is beneficial to write the lines of code by following the instructor and/or the provided hangouts. The instructor and his assistants will help the individuals with their questions and problems. The instructor will use a mac machine to cover the topics the participants are expected to bring their own computer systems irrespective of their operating systems. The instructor and his assistants will be available to help the participants with their setup of the needed website for the workshop prior to the start of the workshop. The topics include HTML syntax, elements, tags, linking pages, creating lists, CSS syntax, classes & IDs, standard color selection, JavaScript syntax, conditional statements, loops etc.

**ACKNOWLEDGEMENT**

Apart my efforts, the success of any project depends largely on the encouragement and guidelines of many others. I take this opportunity to express my gratitude to the people who have been instrumental in the successful completion of this project. I express deep sense of gratitude to almighty God for giving me the strength for the successful completion of the project. I express my heartfelt gratitude to my parents for constant encouragement while carrying out this project. I gratefully acknowledge the contribution of the individuals who contributed in bringing this project up to this level, who continues to look after me despite my flaws, I express my deep sense of gratitude to Dr. Rohit Garg, the luminary the Director, Moradabad Institute of Technology who has been continuously motivating and extending their helping hand to us. I express my sincere thanks to

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Yash Bhatnagar

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**CHAPTER – 1**

**INTRODUCTION – HTML**

**2.1 HTML**

The Hypertext Markup Language, or HTML is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets (CSS) and scripting languages such as JavaScript.

Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages. HTML describes the structure of a webpage semantically and originally included cues for the appearance of the document.

Html elements are the building blocks of HTML pages. With HTML constructs, image, and other objects such as interactive forms may be embedded into the rendered page. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items.

**2.2 BASIC SYNTAX**

<!DOCTYPE html>  
<html>  
<head>  
<title>Page Title</title>  
</head>  
<body>  
  
<h1>Heading</h1>  
<p>paragraph</p>  
  
</body>  
</html>

**2.3 TYPES OF ELEMENTS**

The elements in HTML are use for different purposes and they are classified into two categories – Metadata and Selection.

**2.3.1 Metadata elements**

<html> </html>  
<head> </head>  
<title> </title>

**2.3.2 Selection elements**

<body> </body>

<h1> </h1>

**2.4 TAGS**

Tags in HTML are use to style of the text like paragraph, bold, italic, insert images, liking text and images to other links etc.

**2.4.1 Important tags**

Some of the important tags are given below:

<b> </b> use to bold the text

<em> </em> use to emphasize or italic the text

**2.4.2 IMG tag**

<img src="img\_tag.jpg" alt="this is img tag" width="500" height="600">

It is use to insert the image on the webpage.

**2.5 LINKING PAGES**

<a href="https://www.google.co.in">Visit Google India!</a>

Here a stand for anchor and anchor tag is used to link hyperlinks with text and images present on the webpage.

**2.6 LIST IN HTML**

**Unordered List**

<ul>  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ul>

OUTPUT

* Coffee
* Tea
* Milk

**Ordered List**

<ol>  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ol>

OUTPUT

1. Coffee
2. Tea
3. Milk

**CHAPTER – 2**

**INTRODUCTION – CSS & OTHER IMPORTANT TOPICS**

**3.1 – CSS**

* CSS stands for Cascading Style Sheets
* CSS describes how HTML elements are to be displayed on screen, paper, or in other media
* CSS saves a lot of work. It can control the layout of multiple web pages all at once
* External stylesheets are stored in CSS files

**3.2 – CLASSES & IDs**

**Classes**

.center {  
  text-align: center;  
  color: red;  
}

**IDs**

#para1 {  
  text-align: center;  
  color: red;  
}

**3.3 – STANDARD COLORS**

There are total 140 Standard colors but we can also assign the customized color by using the RGB values that color.

<h1 style="background-color:DodgerBlue;">Hello World</h1>  
<p style="background-color:Tomato;">Tomato...</p>

**CHAPTER – 3**

**INTRODUCTION - JAVASCRIPT**

* 1. **INTRODUCTION**
* JavaScript is the world's most popular programming language.
* JavaScript is the programming language of the Web.
* JavaScript is easy to learn.
* This tutorial will teach you JavaScript from basic to advanced.
  1. **CALLING METHODS**

The dot (.) operator is used to call the functions.

Examples,

var fgImage = new SimpleImage (“drewGreen.png”);

var w = fgImage.getWidth( );

var h = fgImage.getHeigth( );

* 1. **LOOPS**

for (let i = 0; i < cars.length; i++) {  
  text += cars[i] + "<br>";  
}

**4.4 FUNCTIONS**

fuction square (x)

{

var ans = x\*x;

return ans;

}

var y = square(4)

* 1. **CONDITIONAL STATEMENTS**

They are used to provide output as per the condition required.

Example,

if (time < 10) {  
  greeting = "Good morning";  
} else if (time < 20) {  
  greeting = "Good day";  
} else {  
  greeting = "Good evening";  
}

* 1. **CREATING BUTTON AND USING IT**

Button tag in HTML is used to insert the button on the webpage and what this button does can be defined using JavaScript.

<button type="button">Click Me! </button>

**CHAPTER – 4**

**PROJECT DESCRIPTION**

**5.1 OVERVIEW**

I made webpage by using front-end web technologies – HTML, CSS and JavaScript

* The webpage title is “**Image Filters**”, suggests the project is all about the website with which user can apply different fun filters on the images upload by the user(client).
* Thanks to Duke University as they have provided the JavaScript file that contains the code which is used as a kind of library file in the project.
* User the download the filtered image if he/she like that.
* The downloaded output image possesses its original resolution and hench there is no loss of quality in the input and the output image.

**5.2 STEPS TO FOLLOW**

* Firstly, open the webpage.
* The webpage shows a ‘Choose Files’ button.
* Click on the button and choose the required image you want to customize with filters.
* Now you’ll see the chosen image on the on the webpage and now you can select whatever filter you want to apply on that image.
* You can also download the filtered image by right clicking the image and then choose the ‘Save image as..’ option.
* The download image retains its original resolution as the uploaded (chosen) image. Hence provide the same quality of the image.

**5.3 PROJECT CODE AND OUTPUT**

5.3.1 HTML Source Code

<!DOCTYPE html>

<html lang="en" >

<head>

  <meta charset="UTF-8">

  <title>Image Filtering</title>

  <link rel="stylesheet" href="./style.css">

</head>

<body>

<!-- partial:index.partial.html -->

<script src="https://www.dukelearntoprogram.com/course1/common/js/image/SimpleImage.js" ></script>

<script src="./DukeUniversitySimpleImage.js" ></script>

<h1>Image Filters</h1>

<p> <canvas id="can"> </canvas></p>

<h2>Load Image</h2>

<input type="file" multiple="false" accept="image/\*" id="file" onchange="upload()" >

<h2>Filters</h2>

<p> <input type="button" value="Red-ish" onclick="doReddish()"> <input type="button" value="Greenish" onclick="doGreenish()"> <input type="button" value="Blue-ish" onclick="doBlueish()"></p>

<p> <input type="button" value="GrayScale" onclick="doGray()"> <input type="button" value="Rainbow" onclick="doRainbow()"> </p>

<p> <input type="button" value="Original" onclick="makeOriginal()"> </p>

<!-- partial -->

<script  src="./script.js"></script>

</body>

</html>

Fig.4.1 – HTML code

5.3.2 CSS Source Code

body {

    background: linear-gradient(45deg, #ee7752, #e73c7e, #23a6d5, #23d5ab);

    background-size: 400% 400%;

    animation: gradient 7s ease infinite;

}

@keyframes gradient {

    0% {

        background-position: 0% 50%;

    }

    50% {

        background-position: 100% 50%;

    }

    100% {

        background-position: 0% 50%;

    }

}

canvas {

  border: 1px solid;

  height: 400px;

}

Fig.4.2 – CSS code

5.3.3 Logic used in JavaScript

Table

Description automatically generated

Fig.4.3 – Programming Logic

5.3.4 JavaScript Source Code

var originalImage = null;

var grayImage = null;

var reddisImage = null;

var greenishImage = null;

var blueishImage = null;

var rainbowImage = null;

var imgcanvas = document.getElementById("can");

function upload() {

   var fileinput = document.getElementById("file");

   originalImage = new SimpleImage(fileinput);

   grayImage = new SimpleImage(fileinput);

   reddishImage = new SimpleImage(fileinput);

   greenishImage = new SimpleImage(fileinput);

   blueishImage = new SimpleImage(fileinput);

   rainbowImage = new SimpleImage(fileinput);

   originalImage.drawTo(imgcanvas);

}

function imageIsLoaded(image) {

  return (!image == null  || image.complete());

}

//to make image greenish

function makeGreenish(image) {

  for (var pixel of image.values()) {

    var avg = (pixel.getRed()+pixel.getGreen()+pixel.getBlue())/3;

    if (avg < 128) {

    pixel.setRed(0);

    pixel.setGreen(2\*avg);

    pixel.setBlue(0);

    }

    else {

    pixel.setRed(2\*avg - 255);

    pixel.setGreen(255);

    pixel.setBlue(2\*avg - 255);

    }

  }

  return image;

}

//to make image reddish

function makeReddish(image) {

  for (var pixel of image.values()) {

    var avg = (pixel.getRed()+pixel.getGreen()+pixel.getBlue())/3;

    if (avg < 128) {

    pixel.setRed(2\*avg);

    pixel.setGreen(0);

    pixel.setBlue(0);

    }

    else {

    pixel.setRed(255);

    pixel.setGreen(2\*avg - 255);

    pixel.setBlue(2\*avg - 255);

    }

  }

  return image;

}

//to make image blueish

function makeBlueish(image) {

  for (var pixel of image.values()) {

    var avg = (pixel.getRed()+pixel.getGreen()+pixel.getBlue())/3;

    if (avg < 128) {

    pixel.setRed(0);

    pixel.setGreen(0);

    pixel.setBlue(2\*avg);

    }

    else {

    pixel.setRed(2\*avg - 255);

    pixel.setGreen(2\*avg - 255);

    pixel.setBlue(255);

    }

  }

  return image;

}

//to make image grayscale

function makeGray(image) {

  for (var pixel of image.values()) {

  var avg = (pixel.getRed()+pixel.getGreen()+pixel.getBlue())/3;

  pixel.setRed(avg);

  pixel.setGreen(avg);

  pixel.setBlue(avg);

 }

 return image;

}

//to make rainbow

function makeRainbow(image) {

  var h = image.getHeight();

  for (var pixel of image.values()) {

    var y = pixel.getY();

    var avg = (pixel.getRed()+pixel.getGreen()+pixel.getBlue())/3;

    //VIBGYOR in reverse order

    //R - Red

    if (y < h/7) {

       if (avg < 128) {

        pixel.setRed(2\*avg);

        pixel.setGreen(0);

        pixel.setBlue(0);

       }

       else {

        pixel.setRed(255);

        pixel.setGreen(2\*avg - 255);

        pixel.setBlue(2\*avg - 255);

       }

    }

    //O - Orange

    else if (y < 2\*h/7) {

       if (avg < 128) {

        pixel.setRed(2\*avg);

        pixel.setGreen(0.8\*avg);

        pixel.setBlue(0);

       }

       else {

        pixel.setRed(255);

        pixel.setGreen(1.2\*avg - 51);

        pixel.setBlue(2\*avg - 255);

       }

    }

    //Y - Yellow

    else if (y < 3\*h/7) {

       if (avg < 128) {

        pixel.setRed(2\*avg);

        pixel.setGreen(2\*avg);

        pixel.setBlue(0);

       }

       else {

        pixel.setRed(255);

        pixel.setGreen(255);

        pixel.setBlue(2\*avg - 255);

       }

    }

    //G - Green

    else if (y < 4\*h/7) {

       if (avg < 128) {

        pixel.setRed(0);

        pixel.setGreen(2\*avg);

        pixel.setBlue(0);

       }

       else {

        pixel.setRed(2\*avg - 255);

        pixel.setGreen(255);

        pixel.setBlue(2\*avg - 255);

       }

    }

    //B - Blue

    else if (y < 5\*h/7) {

       if (avg < 128) {

        pixel.setRed(0);

        pixel.setGreen(0);

        pixel.setBlue(2\*avg);

       }

       else {

        pixel.setRed(2\*avg - 255);

        pixel.setGreen(2\*avg - 255);

        pixel.setBlue(255);

       }

    }

    //I - Indigo

    else if (y < 6\*h/7) {

       if (avg < 128) {

        pixel.setRed(0.8\*avg);

        pixel.setGreen(0);

        pixel.setBlue(2\*avg);

       }

       else {

        pixel.setRed(1.2\*avg - 51);

        pixel.setGreen(2\*avg - 255);

        pixel.setBlue(255);

       }

    }

    //V - Violet

    else {

       if (avg < 128) {

        pixel.setRed(1.6\*avg);

        pixel.setGreen(0);

        pixel.setBlue(1.6\*avg);

       }

       else {

        pixel.setRed(0.4\*avg + 153);

        pixel.setGreen(2\*avg - 255);

        pixel.setBlue(0.4\*avg + 153);

       }

    }

  }

  return image;

}

//to change the image to original image

function makeOriginal() {

  originalImage.drawTo(imgcanvas);

}

function doReddish() {

  if (imageIsLoaded(reddishImage)) {

    makeReddish(reddishImage);

    reddishImage.drawTo(imgcanvas);

  }

}

function doGreenish() {

  if (imageIsLoaded(greenishImage)) {

    makeGreenish(greenishImage);

    greenishImage.drawTo(imgcanvas);

  }

}

function doBlueish() {

  if (imageIsLoaded(blueishImage)) {

    makeBlueish(blueishImage);

    blueishImage.drawTo(imgcanvas);

  }

}

function doGray() {

  if (imageIsLoaded(grayImage)) {

    makeGray(grayImage);

    grayImage.drawTo(imgcanvas);

  }

}

function doRainbow() {

  if (imageIsLoaded(rainbowImage)) {

    makeRainbow(rainbowImage);

    rainbowImage.drawTo(imgcanvas);

  }

}

Fig.4.4 – JavaScript Complete Code

**5.3.5 Output Webpage**

A picture containing graphical user interface

Description automatically generated

Fig.4.5(a) – Webpage (1)

1. Clicked on the ‘Choose Files’ Button & upload the image named ‘Scene-4k.jpg’.

**Graphical user interface

Description automatically generated**

Fig.4.5(b) – Webpage (2)

1. Clicked on the ‘Rainbow’ Button & the rainbow filter is applied on the uploaded image.

Graphical user interface

Description automatically generated

Fig.4.5(c) – Webpage (3)

1. Save the filtered image by right clicking the image and then choose the ‘Save image as..’ option.

Graphical user interface, website

Description automatically generated

Fig.4.5(d) – Webpage (4)

1. The output image is now saved in the user’s system.

**5.4 Project Conclusion**

After following the above steps, we can conclude that:

* The webpage can be used to apply the different filters on the image which the user can download (if needed).
* The downloaded image is of the same resolution as the uploaded (original) image. Hence there is no loss of quality in the output images during the whole process.
* The user now no more required to download any third-party software which might breach the user privacy & could the access to the user’s personal images.

**CHAPTER – 5**

**CONCLUSION**

This course, Programming Foundations with JavaScript, HTML and CSS, introduces the basics of HTML, CSS and JavaScript using the website codepen.io which is very popular for making front-end projects for the beginners and very easy to use as it provides the real time execution of HTML, CSS and JavaScript codes all together and that proves to be very useful while creating a webpage like this. The course has no prerequisites. It will cover Chapters 1-4 mention in the above part of the report. The course is for you if you're a newcomer to web development, if you need a refresher on front-end web technologies i.e., HMTL, CSS and JavaScript, or if you may have had some exposure to these technologies but want a more in-depth exposition and vocabulary in your logics. This is the first of five courses in the Java Programming and Software Engineering Fundamentals Specialization.

**BIBLIOGRAPHY**

# <https://www.coursera.org/in>

# <https://www.w3schools.com/>

# <https://www.dukelearntoprogram.com/course1/doc>

# <https://developer.mozilla.org/en-US/docs>

# <https://codepen.io/>